

What is claimed is:

1. A slider of a thin-film magnetic head comprising:
a medium facing surface that faces toward a recording
medium;

5 a substrate having a first surface that faces toward the
recording medium and is located farther from the recording medium
than the medium facing surface; and a second surface that meets
the first surface;

10 a thin-film magnetic head element located near the second
surface of the substrate and near the medium facing surface;

an insulating portion surrounding the thin-film magnetic
head element and having a surface that constitutes a part of the
medium facing surface; and

15 a medium facing layer located adjacent to the first surface
of the substrate and having a surface that constitutes another
part of the medium facing surface, wherein:

the substrate has a hardness greater than that of the
insulating portion, and

20 as the substrate and the medium facing layer are compared
in hardness, the medium facing layer has a hardness closer to that
of the insulating portion.

2. A slider of a thin-film magnetic head according to claim
1, wherein the medium facing surface has a concavity/convexity
25 for controlling flying of the slider over the recording medium.

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3. A slider of a thin-film magnetic head according to claim 1, wherein the main material of the insulating portion and the material of the medium facing layer are the same.

5 4. A slider of a thin-film magnetic head according to claim 3, wherein: the substrate is made mainly of aluminum oxide and titanium carbide; the insulating portion is made mainly of alumina; and the medium facing layer is made of alumina.

10 5. A slider of a thin-film magnetic head according to claim 1, wherein: the substrate is made mainly of aluminum oxide and titanium carbide; the insulating portion is made mainly of alumina; and the medium facing layer is made of diamond-like carbon.

15 6. A method of manufacturing a slider of a thin-film magnetic head, the slider comprising: a medium facing surface that faces toward a recording medium; a substrate having a first surface that faces toward the recording medium and is located farther from the
20 recording medium than the medium facing surface; and a second surface that meets the first surface; a thin-film magnetic head element located near the second surface of the substrate and near the medium facing surface; an insulating portion surrounding the thin-film magnetic head element and having a surface that
25 constitutes a part of the medium facing surface; and a medium facing layer located adjacent to the first surface of the substrate

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and having a surface that constitutes another part of the medium facing surface, wherein: the substrate has a hardness greater than that of the insulating portion, and, as the substrate and the medium facing layer are compared in hardness, the medium facing
5 layer has a hardness closer to that of the insulating portion, the method comprising the steps of:

forming a slider material including the substrate, the thin-film magnetic head element and the insulating portion;

forming the first surface in the slider material, by etching
10 a surface of the substrate facing toward the recording medium;

forming the medium facing layer in the slider material so as to be adjacent to the first surface; and

forming the medium facing surface in the slider material, by lapping a surface of the medium facing layer facing toward the
15 recording medium and a surface of the insulating portion facing toward the recording medium.

7. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, further comprising the step of forming
20 a concavity/convexity in the medium facing surface to control flying of the slider over the recording medium.

8. A method of manufacturing a slider of a thin-film magnetic head according to claim 7, wherein the step of forming the
25 concavity/convexity is carried out using ion milling, reactive ion etching, or focused ion beam etching.

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9. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, wherein the main material of the insulating portion and the material of the medium facing layer are the same.

10. A method of manufacturing a slider of a thin-film magnetic head according to claim 9, wherein: the substrate is made mainly of aluminum oxide and titanium carbide; the insulating portion is made mainly of alumina; and the medium facing layer is made of alumina.

11. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, wherein: the substrate is made mainly of aluminum oxide and titanium carbide; the insulating portion is made mainly of alumina; and the medium facing layer is made of diamond-like carbon.

12. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, wherein the step of forming the first surface is carried out using ion milling or reactive ion etching.

13. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, wherein the step of forming the medium facing layer is carried out using sputtering or ion

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beam deposition.

14. A method of manufacturing a slider of a thin-film magnetic head according to claim 6, wherein the step of forming
5 the medium facing surface includes a step for rough lapping and, a step for fine lapping subsequent thereto.

15. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein: the thin-film
10 magnetic head element includes a magnetoresistive element for magnetic signal detection; and the step for rough lapping is carried out while detecting the resistance value of the magnetoresistive element.

- 15 16. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein the rough lapping is mechanical lapping and the fine lapping is a lapping including a chemical lapping factor.

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